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## Electricity wholesale market design in Europe

One of the key energy policy issues in 2023 is the future design of the European electricity market. This is already an important topic in Europe, with countries taking quite different positions on whether and how to reform the current 'marginalist' market design, and on whether these reforms are designed solely to confront the current emergency or should be permanent. The debate could lead either to a strengthening of competitive markets, or to growing reliance on governments and the demise of liberalisation.

The recovery from Covid during 2021 and then in particular the Russia-Ukraine war have led to unprecedented increases in European prices of natural gas and electricity. Other factors, including unexpectedly low wind, hydro, and nuclear generation, have also contributed to the high electricity prices. In response to these, before the Russian invasion of Ukraine, most European governments followed European Commission advice, which was to reduce taxes and levies and to make financial transfers to consumers. This was considered sufficient because, in most European countries, retail prices were fixed for long periods and the expectation (or hope) was that wholesale prices would return to normal before too long.

However, there was an important exception. In September 2021, Spain was the first to take measures to control wholesale electricity prices, introducing the equivalent of a windfall profit tax related to rising gas prices. Although this measure was later watered down to reflect the fact that most energy was sold by contracts that were well below wholesale prices, Spain had set a precedent. The Spanish government had acted quickly because 10 million consumers were on a regulated default tariff that was directly indexed to wholesale spot prices; and because that tariff was the electricity component used to define the national inflation index.

After the Russian invasion of Ukraine, the pressure to intervene in European wholesale markets grew. The EU formally approved what was called the Iberian Exception, the aim of which was to decouple rising wholesale gas prices from electricity prices in Spain and Portugal. Other countries, notably France, Italy, Greece, and Romania also decided to intervene.

As the crisis has continued, two key questions still face European policy makers and require some answers in 2023. They are: 1) whether and how governments should intervene in wholesale electricity markets during the crisis; and 2) whether a new market design is required for the longer term to deliver net zero emissions. Whereas the first of these questions reflects alarm over very high gas and electricity prices, the second responds to a realistic concern that future wholesale electricity prices will be too low and uncertain to justify the needed investment in renewables and flexibility.

The two questions overlap. A central issue for both is that the current 'marginalist' market design is 'pay as clear', so all electricity is traded in day-ahead markets at a single wholesale price that reflects the short-run marginal cost (SRMC) of the resource needed to clear the market in any hour. For many

European countries that resource is frequently natural gas, or hydro, whose opportunity cost is usually the cost of gas. However, as intermittent renewables penetrate deeply and start to set wholesale market electricity prices, these prices are expected to be zero or near zero with increasing frequency, potentially undermining investment in further renewables and more flexible resources. There are many other problems with the current market design, including poor locational signals, lack of long-term investment signals, and inadequate participation of demand-side resources. The question faced by policy makers to address the longer-term challenge is whether to introduce gradual reforms or make significant structural changes to the design of the market.

The political debate in the EU has so far concentrated on short-term decoupling of gas from electricity to lower prices, and on proposals for gradual reform to the existing market design. However, just before Christmas 2022, the European Commission leaked a 'non-paper' on electricity market design. It mentions explicitly the idea of paying each generation technology by reference to its costs. This leaves open many design options, but essentially implies a move away from the marginalist market design. It remains to be seen whether this idea will prosper. In the non-paper, the Commission says it will launch a public consultation on market design and will publish the findings as well as a staff working document assessing options 'early in 2023'. Any structural reform along these lines will be very difficult to agree because the supporters of the current system include key players such as Germany, the Netherlands, Austria, and the Nordic countries. However, failure to reach an agreement on the future market design will undermine investor confidence, which is already dented due to the multiple interventions of the past eighteen months.

By contrast, the UK has already initiated a serious debate about the need for long term structural change. The Review of Electricity Market Arrangements (REMA) was published in July 2022, launching a public consultation on the design of wholesale electricity markets required to deliver net zero emissions by 2035. REMA is also influencing the debate about crisis management, especially with respect to decoupling of gas from electricity prices. The UK has moved faster than the EU on this critical structural issue probably because of the deeper decarbonization occurring in the country but also because of its limited interconnection with other systems.

In the UK and the EU, the market reform debate will focus on the future roles of government and markets. Some governments, notably in southern Europe, view the debate as an opportunity to strengthen government control over consumer prices, resource mix, supply security, and electricity company profitability. Others, notably in northern Europe, seek to maintain the marginalist market design and to rely on markets rather than governments to drive investment, pricing and other key decisions. The writer of this piece and OIES colleague Malcolm Keay have argued for a third way, The Decarbonised Electricity System of the Future: The Two Market Approach, which relies on a new version of competitive markets designed for 21st century economics and technologies, and which reflects consumer preferences. In 2023 we will start to see the direction that EU and UK governments are minded to adopt for the future design of electricity markets.

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